

## CLAIMS

1. Process for manufacturing chocolate mass, **characterized**  
by comprising the following steps:

5           a) dry pre-grinding of the raw material received in its  
original dry form until a desired thickness following through a  
mechanized transportation to the next stage;

10           b) conching of the pre-grinding product with the desired  
thickness characteristics in a "U" type conch (9) for intensive  
chocolate processing, in which part of the liquid ingredients of the  
formulation is added, after being previously melted and heated at an  
adequate temperature in such a way that the formulation ingredients  
15           still in their pre-grinding initial stage are homogenized by the  
alternative movement of the agitator arms of the "U" type conch (9)  
for intensive chocolate processing, through a special dynamic  
rotating movement, thus forming a dry mass with a consistency of a  
powder;

20           c) liquefying and cooling the chocolate mass, where it  
receives the remaining of the cocoa butter of its formulation, being  
homogenized by the alternative movement of the agitator arms of the  
"U" type conch (9) for intensive chocolate processing, thus assuming  
a pasty liquid state, and thereafter, cooled through the injection of a  
25           refrigerating fluid that circulates in the water jacket of the "U" type  
conch (9) for intensive chocolate processing and by the insufflation  
of cold air provided until the chocolate mass reaches the desired

temperature;

d) chocolate mass final grinding, in which the chocolate mass in its liquid state is transferred to a chocolate mass refining mill (21) provided by a refrigeration system, with the purpose to keep the temperature of the chocolate mass, which circulates in its interior submitted to a friction power in the adequate value and in which the chocolate mass already refined is transported from the refining mill to a stock tank (24) and, in its final state of use, waits for the adequate solidification moment.

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2. Process in accordance with claim 1, **characterized in that** the raw material consists of cocoa mass and butter, sugar and powder milk.

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3. Process in accordance with claim 1, **characterized in that** the ground material of step a) is 10 to 200 micra thick.

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4. Process in accordance with claim 1, **characterized in that** the temperature in which the melted ingredients have been heated in the step b) is about 50°C.

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5. Process in accordance with claim 1, **characterized in that** the temperature of the chocolate mass is increased to 60-90°C in the step b).

6. Process in accordance with claim 1, **characterized in that** the cooling fluid in step c) is water.

7. Process in accordance with claim 1, **characterized in that** the desired temperature of the chocolate mass in step c) is about 39°C.

8. Process in accordance with claim 1, **characterized in that** the chocolate mass temperature in step d) is about 60°C.

9. Process in accordance with claim 1, **characterized in that** the chocolate mass thickness in step d) is about 20-40 micra.

10. Machine for the chocolate mass processing, **characterized by** comprising a structure made of a U type conch (9), an agitator axis (12) in which a fixed arm (10) and agitator arms (11) are articulated for increasing the chocolate dry mass exposition cycle to the pre-heated air coming from a forced ventilation performed through a high pressure fan (14), activated by an electric motor with a heating electric resistance (13).

11. Machine in accordance with claim 10, **characterized in that** the U type conch (9) has jacketed walls to receive a refrigeration fluid.

12. Compact installation for the chocolate mass processing, **characterized by** comprising a disposition of germinated equipments where a sugar mill (4) is located above the U type conch (9) thus making feasible the direct dry grinding of the ingredients in the U type processing conch followed by the junction of the cocoa refining mill (21) in the side of the U type conch structure thus forming a monolithic block of equipments occupying an extremely reduced physical area.